

THE HISTORY OF GOSHAWK HABITAT MANAGEMENT IN THE SOUTHWESTERN UNITED STATES

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Northern goshawk (*Accipiter gentilis*) habitat management is very controversial in the southwestern United States. In 1993, at the request of the Arizona Chapter of the Wildlife Society, the Wildlife Society and the American Ornithologists' Union established a blue-ribbon panel of scientists to review USDA, Forest Service goshawk habitat management. We trace the history of goshawk management in the southwest from the 1970s through 1993. We discuss the issues that were raised by the state game and fish agencies, the environmental community and industry. We describe how the USDA, Forest Service developed its management policy. We discuss fire and timber management practices and their impact on goshawk habitat quality. Finally, we briefly outline the major components of the "state-of-the-art" goshawk habitat management in North America.

MANAGING PONDEROSA PINE FORESTS FOR PREDATOR AND PREY—A PROTOTYPE FOR ECOSYSTEM MANAGEMENT

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Single species management plans are being replaced by multiple-species habitat management plans in the southwestern United States. Here we describe the basis for managing ponderosa pine forests using the habitat needs of a wide-ranging predator and the habitat needs of its prey. We present pre-settlement forest conditions, existing forest conditions, and the desired forest conditions needed to sustain the ecosystem for the northern goshawk (*Accipiter gentilis*) and its prey centuries into the future. We discuss the sustainability of the ponderosa pine forest in terms of vegetative structural stages and illustrate the importance of a single vegetative structural stage for one prey species.

NORTHERN GOSHAWK AND SOUTHWESTERN FOREST MANAGEMENT: A REVIEW

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The American Ornithologists' Union and The Wildlife Society organized a review, November 1993, of USDA Forest Service management guidelines and implementation designed to maintain habitats for the northern goshawk (*Accipiter gentilis*) in southwestern forests. Specific charges were to review the scientific literature concerning northern goshawk biology and management pertinent to the Southwest, evaluate the scientific basis and policy guidance for the interim guidelines, perform an on-the-ground inspection of forest management conditions in the Southwest relative to implementation of the interim guidelines, and prepare a report outlining the findings and recommendations. A summary of this report that focuses on status of the northern goshawk, forest management, and implementation guidelines is presented.

NORTHERN GOSHAWK REPRODUCTION RELATIVE TO SELECTION HARVEST IN ARIZONA

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In Crocker-Bedford (1990, *Wildl. Soc. Bull.* 18:262-269), I limited my 1985-87 analyses of the effects of timber harvesting on northern goshawk (*Accipiter gentilis*) to 31 nest clusters which were consistent with the 1982 study plan. At the 1993 RRF annual meeting Boyce et al. suggested that I should have used all my 1987 data. The following analysis does so, except for nest clusters first discovered in 1987 (to avoid bias due to active territories being easier to discover). Rates of goshawk occupancy and nestling production in 1987, on the North Kaibab Ranger District, Arizona, were compared against the amount of selection harvesting 1973-86 within an assumed home range of 2.7-km radius around the center of each nest cluster. Species use of clusters was confirmed by goshawks in nests (83% of clusters—was 97% for territories in Crocker-Bedford 1990), or was presumed from nest and stand characteristics along with nearby goshawks (15% of clusters—was 3% in Crocker-Bedford 1990). Occupancy in 1987 was confirmed by eggs or goshawks in nests (86%—was 100% in Crocker-Bedford 1990), recently fledged goshawks near used nests (9%), or by reconstruction of historical nest with adult goshawk nearby (5%). Young were counted near time of fledging. I separated 53 nest clusters into four categories: 12 in assumed home ranges which had received little or no harvesting 1973-86; 14 which had selection harvesting on 10-39% of each home range area; 16 which had harvesting on 40-69% of each home range area; and 11 which had selection harvesting 1973- on 70-90% of each home range area. For the four categories, respectively, occupancy rates were 83%, 43%, 31%, and 9% ($P < 0.001$). Mean young per nest attempt were, respectively, two, two, one, and zero. Considering both